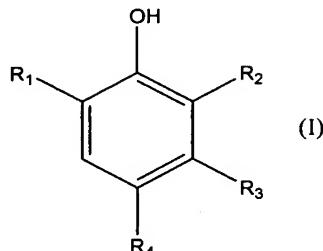


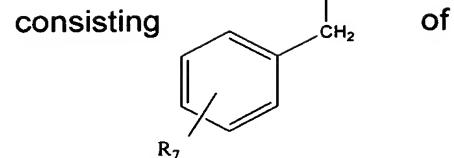
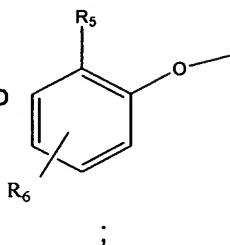
What is Claimed is:

1. The compound of Formula (I):



5

wherein

R₁ is selected from the group
and

R₂ and R₃ are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; a hydroxyalkyl group; a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; and benzyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group;

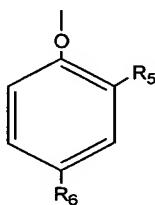
20

25 R₄ is selected from the group consisting of hydrogen, an alkyl group, a cycloalkyl group, benzyl, and phenyl;

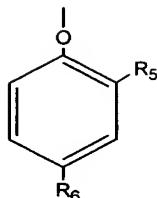
R_5 is selected from the group consisting of hydroxyl, benzyl, alkoxy, hydroxyalkyl, and cycloalkyl optionally substituted with hydroxyl; and

R_6 and R_7 are each independently selected from the group consisting of
 5 hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; benzyl, an alkoxy group; phenyl optionally substituted with an alkyl group, a cycloalkyl group, an alkenyl group, a cycloalkenyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is
 10 optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenoxy; and benzyloxy;

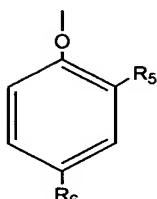
X1
 with the proviso that:



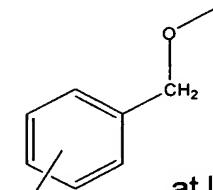
- a) when R_1 is a and R_2 and R_4 are each hydrogen, and
 15 1) when R_3 is hydrogen, then R_6 is not hydrogen, methyl, tert-butyl, phenyl, or phenoxy;
- 2) when R_5 is hydroxyl and one of R_3 and R_6 is hydrogen, then the other of R_3 and R_6 is not selected from the group consisting of hydrogen, n-propyl, n-
 20 butyl, n-pentyl, 1-methylethyl, 2-methylpropyl, 3-methylbutyl, benzyl, or cyclohexyl;
- 3) when R_3 and R_6 are each hydrogen, then R_5 is not benzyl;
- 4) when R_5 is hydroxyl and R_3 is ethyl, then R_6 is not methyl;
- 5) when R_5 is hydroxyl and R_3 is tert-butyl, then R_6 is not tert-butyl;



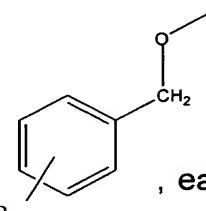
- b) when R_1 is a , R_3 , R_4 and R_6 are each hydrogen, and R_5 is hydroxyl, then R_2 is not selected from the group consisting of phenyl and tert-butyl;



- 5 ✓
c) when R_1 is a , R_5 is hydroxyl, and R_6 is hydrogen, then none of R_2 , R_3 , and R_4 is C₁-C₄ alkyl, the other two of R_2 , R_3 , and R_4 being hydrogen;



- 10
d) when R_1 is a , at least one of R_2 , R_3 and R_4 is not hydrogen, and



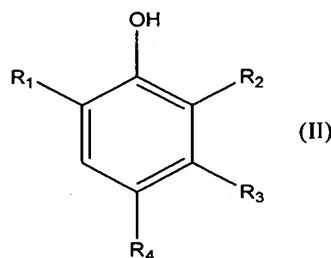
- 20
e) when R_1 is a , each of R_2 , and R_3 is hydrogen, and R_4 is tert-butyl, then R_7 is not hydrogen

2. The compound of claim 1 wherein each of R_3 , and R_6 are selected from the group consisting of straight and branched alkyl groups.

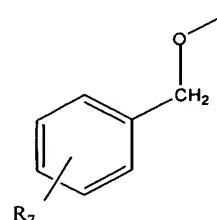
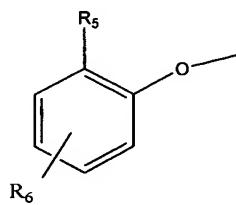
3. The compound of claim 1 wherein each of R_3 , R_5 , and R_6 is a cycloalkyl group.

4. The compound of claim 1 further including a member selected from the group consisting of 2-(2-hydroxyphenoxy)-5-heptylphenol, 2-(2-hydroxyphenoxy)-5-octylphenol, 2-but-2-enyl-6-(2-methoxyphenoxy)phenol, 2-(2-methoxyphenoxy)-6-butylphenol, 2-(2-hydroxyphenoxy),6-(3-hydroxypropyl)phenol, 6-(2-hydroxypropyl)-2-(2-methoxyphenoxy)phenol, 6-(3-hydroxypropyl)-2-(2-methoxyphenoxy)phenol, 6-(3-hydroxy-1-methylpropyl)-2-(2-hydroxyphenoxy)phenol, 6-(1-methyl-3-hydroxypropyl)-2-(2-methoxyphenoxy)phenol, 2-(2-hydroxyphenoxy)-6-(2-hydroxycyclohexyl)phenol, 2-(2-hydroxyphenoxy)-6-(3-hydroxycyclohexyl)phenol, 2-(2-methoxyphenoxy)-6-prop-2-enylphenol, 2-(2-methoxyphenoxy)-6-(1-methylprop-2-enyl)phenol, 2-(2-methoxyphenoxy)-6-propylphenol, 2-tert-butyl-6-phenylmethoxyphenol, 2-phenylmethoxy-4-cyclohexylphenol, 2-(2-hydroxy-4-tert-butylphenoxy)-6-propylphenol, 2-(2-hydroxyphenoxy)-5-cyclohexylmethylphenol, 2-(2-hydroxyphenoxy)-6-cyclohexylphenol.

5. An antimicrobial composition comprising an antimicrobial effective amount of at least one antimicrobial compound of Formula (II):



wherein



R₁ is selected from the group consisting of and

;

R₂ and R₃ are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group;

5 a hydroxyalkyl group; a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and

10 a hydroxycycloalkyl group; and benzyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group;

A²

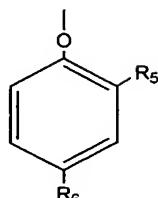
R₄ is selected from the group consisting of hydrogen, an alkyl group, a cycloalkyl group, benzyl, and phenyl;

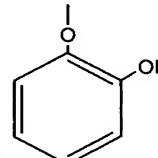
R₅ is selected from the group consisting of hydroxyl, benzyl, alkoxy, hydroxyalkyl, and cycloalkyl optionally substituted with hydroxyl; and

20 R₆ and R₇ are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; benzyl, an alkoxy group; phenyl optionally substituted with an alkyl group, a cycloalkyl group, an alkenyl group, a cycloalkenyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl

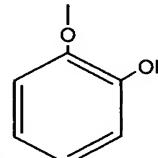
group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenoxy; and benzyloxy;

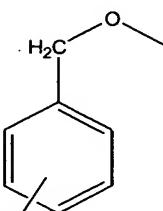
with the proviso that:

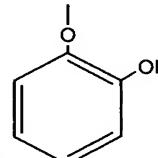


- 5 a) when R_1 is  , and R_2 and R_4 are each hydrogen, and
- 1) when R_3 is hydrogen, then R_6 is not hydrogen or methyl;
 - 2) when R_3 is hydrogen and R_5 is hydroxyl, then R_6 is not hydrogen;
 - 3) when R_3 is tert-butyl and R_5 is hydroxyl, then R_6 is not 4-tert-butyl;

X~

- 10 b) when R_1 is  , then none of R_2 , R_3 and R_4 is C₁-C₄ alkyl, the other two of R_2 , R_3 and R_4 being hydrogen;

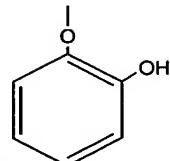


- c) when R_1 is a R_7  , then each of R_2 , R_3 , R_4 and R_7 are not hydrogen;

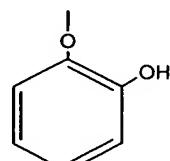
and

an antimicrobial effective carrier.

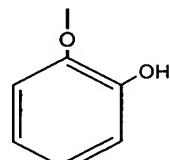
6. The antimicrobial composition of claim 5 wherein the antimicrobial effective carrier is selected from the group consisting of water, saline, alcohol, glycerin, propylene glycol, mineral oil, petrolatum, and mixtures thereof.



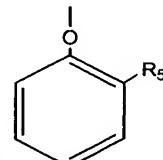
7. The antimicrobial composition of claim 5 wherein R₁ is , each
5 of R₃ and R₄ are hydrogen, and R₂ is selected from the group consisting of alkyl,
hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



10 8. The antimicrobial composition of claim 5 wherein R₁ is , each
of R₂ and R₄ are hydrogen, and R₃ is selected from the group consisting of alkyl,
hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



9. The antimicrobial composition of claim 5 wherein R₁ is , each
15 of R₂ and R₃ are hydrogen, and R₄ is selected from the group consisting of alkyl,
hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



10. The antimicrobial composition of claim 5 wherein R₁ is , and
R₅ is alkoxy.

11. The antimicrobial composition of claim 40 wherein each of R₃ and R₄ is hydrogen and R₂ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

5

12. The antimicrobial composition of claim 10 wherein each of R₂ and R₄ is hydrogen and R₃ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

10

13. The antimicrobial composition of claim 10 wherein each of R₂ and R₃ is hydrogen and R₄ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

15

14. The antimicrobial composition of claim 5 wherein the antimicrobial effective amount is from about 0.0001 to 10% by weight of the total weight of the antimicrobial composition.

15. The antimicrobial composition of claim 14 wherein the antimicrobial effective amount is from about 0.001 to 5% by weight.

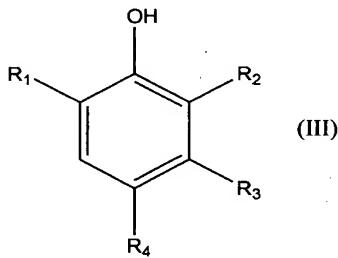
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16. The antimicrobial composition of claim 5 wherein the antimicrobial compounds of Formula (II) are selected from the group consisting of 2-(2-Hydroxy-4-methylPhenoxy)-5-ethylPhenol, 2-(2-HydroxyPhenoxy)-5-heptylPhenol, 2-(2-HydroxyPhenoxy)-5-octylPhenol, 2-but-2-enyl-6-(2-methoxyphenoxy)phenol, 2-(2-methoxyphenoxy)-6-butylphenol, 2-(2-hydroxyphenoxy)-6-(3-hydroxypropyl)phenol, 6-(2-hydroxypropyl)-2-(2-methoxyphenoxy)phenol, 6-(3-hydroxypropyl)-2-(2-

25

methoxyphenoxy)phenol, 6-(3-hydroxy-1-methylpropyl)-2-(2-hydroxyphenoxy)phenol,
 6-(3-hydroxy-1-methylpropyl)-2-(2-methoxyphenoxy)phenol, 2-(2-hydroxyphenoxy)-6-
 (2-hydroxycyclohexyl)phenol, 2-(2-hydroxyphenoxy)-6-(3-hydroxycyclohexyl)phenol,
 2-(2-methoxyphenoxy)-6-prop-2-enylphenol, 2-(2-methoxyphenoxy)-6-(1-methylprop-
 5 2-enyl)phenol, 2-(2-methoxyphenoxy)-6-propylphenol, 2-tert-butyl-6-
 phenylmethoxyphenol, 2-(4-(1-methyl-1-ethylpropyl)-phenylmethoxy)phenol, 2-
 phenylmethoxy-4-cyclohexylphenol, 2-(2-hydroxy-4-tert-butylphenoxy)-6-propylphenol,
 2-(2-hydroxyphenoxy)-5-cyclohexylmethylphenol, 2-(2-hydroxyphenoxy)-6-
 cyclohexylphenol, 2-(2-methoxyphenoxy)-6-but-2-enylphenol, 2-(2-methoxyphenoxy)-
 10 5-phenylmethylphenol.

17. An oral composition comprising an antimicrobial effective amount of at least one antimicrobial compound of Formula (III):



wherein

R₁ is selected from the group consisting of

20

R₂ and R₃ are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; a hydroxalkyl group; a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group 25 consisting of an alkyl group, a cycloalkyl group, a hydroxalkyl group, and a hydroxycycloalkyl group; phenyl optionally substituted with a member selected from

the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; and benzyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group;

5

R_4 is selected from the group consisting of hydrogen, an alkyl group, a cycloalkyl group, benzyl, and phenyl;

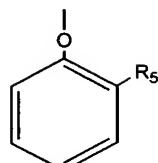
R_5 is selected from the group consisting of hydroxyl, benzyl, alkoxy, 10 hydroxyalkyl, and cycloalkyl optionally substituted with hydroxyl; and

X

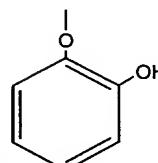
R_6 and R_7 are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; benzyl, an alkoxy group; phenyl optionally substituted with an alkyl group, a cycloalkyl group, an alkenyl group, a cycloalkenyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenoxy; and benzyloxy;

15
20

with the proviso that



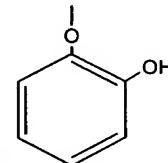
a) when R_1 is



b) when R_1 is

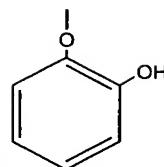
5 an orally acceptable carrier.

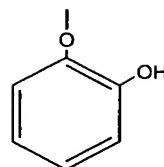
18. The oral composition of claim 17 wherein the orally acceptable carrier is selected from the group consisting of water, saline, alcohol, glycerin, propylene glycol and mixtures thereof.

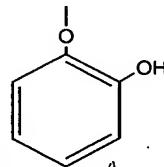


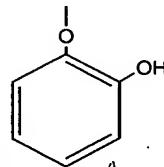
10 19. The oral composition of claim 17 wherein R_1 is

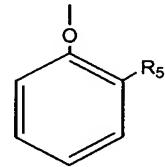
, each of R_3 and R_4 are hydrogen, and R_2 is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

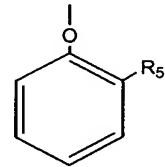


20. The oral composition of claim 17 wherein R₁ is  , each of R₂ and R₄ are hydrogen, and R₃ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



5 21. The oral composition of claim 17 wherein R₁ is  , each of R₂ and R₃ are hydrogen, and R₄ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



22. The oral composition of claim 17 wherein R₁ is  , and R₅ is
10 alkoxy.

23. The oral composition of claim 22 wherein each of R₃ and R₄ is hydrogen and R₂ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

15

24. The oral composition of claim 22 wherein each of R₂ and R₄ is hydrogen and R₃ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

25. The oral composition of claim 22 wherein each of R₂ and R₃ is hydrogen and R₄ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

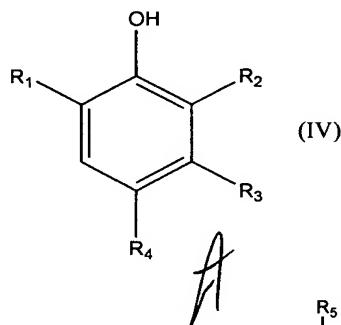
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26. The oral composition of claim 17 wherein the antimicrobial effective amount is from about 0.0001 to 10% by weight of the total weight of the oral composition.

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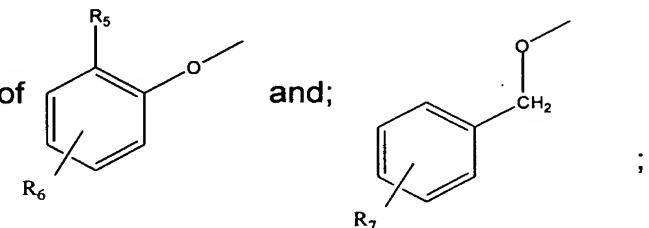
27. The oral composition of claim 26 wherein the antimicrobial effective amount is from about 0.001 to 5% by weight.

28. An oral composition comprising an antimicrobial effective amount of at least one antimicrobial compound of Formula (IV):



wherein

20 R₁ is selected from the group consisting of



25 R₂ and R₃ are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; a hydroxyalkyl group; a hydroxycycloalkyl group; an alkyl group substituted with phenyl

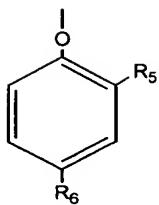
in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; and benzyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group;

R₄ is selected from the group consisting of hydrogen, an alkyl group, a cycloalkyl group, benzyl, and phenyl;

R₅ is selected from the group consisting of hydroxyl, benzyl, alkoxy, hydroxyalkyl, and cycloalkyl optionally substituted with hydroxyl; and

R₆ and R₇ are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; benzyl, an alkoxy group; phenyl optionally substituted with an alkyl group, a cycloalkyl group, an alkenyl group, a cycloalkenyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenoxy; and benzyloxy;

with the proviso that



when R₁ is , then each of R₂, R₃, R₄, and R₆ is not hydrogen; and
an orally acceptable carrier.

Mk 5 29. The oral composition of claim 28 further comprising at least one essential oil.

10 30. The oral composition of claim 29 wherein the essential oil is selected from the group consisting of thymol, menthol, eucalyptol, methyl salicylate, and combinations thereof.

15 31. The oral composition of claim 30, wherein the essential oil comprises:
an amount of from about 0.005 to 0.5 % menthol;
an amount of from about 0.005 to 0.5 % eucalyptol;
an amount of from about 0.005 to 0.5 % methyl salicylate; and
an amount of from about 0.005 to 0.5 % thymol.

20 32. The oral composition of claim 28 wherein the antimicrobial compounds of Formula (IV) are selected from the group consisting of 2-(2-Hydroxy-4-methylPhenoxy)-5-ethylPhenol, 2-(2-HydroxyPhenoxy)-5-heptylPhenol, 2-(2-HydroxyPhenoxy)-5-octylPhenol, 2-but-2-enyl-6-(2-methoxyphenoxy)phenol, 2-(2-methoxyphenoxy)-6-butylphenol, 2-(2-hydroxyphenoxy)-6-(3-hydroxypropyl)phenol, 6-(2-hydroxypropyl)-2-(2-methoxyphenoxy)phenol, 6-(3-hydroxypropyl)-2-(2-

methoxyphenoxy)phenol, 6-(3-hydroxy-1-methylpropyl)-2-(2-hydroxyphenoxy)phenol,
6-(3-hydroxy-1-methylpropyl)-2-(2-methoxyphenoxy)phenol, 2-(2-hydroxyphenoxy)-6-
(2-hydroxycyclohexyl)phenol, 2-(2-hydroxyphenoxy)-6-(3-hydroxycyclohexyl)phenol,
2-(2-methoxyphenoxy)-6-prop-2-enylphenol, 2-(2-methoxyphenoxy)-6-(1-methylprop-
5 2-enyl)phenol, 2-(2-methoxyphenoxy)-6-propylphenol, 2-tert-butyl-6-
phenylmethoxyphenol, 2-(4-(1-methyl-1-ethylpropyl)-phenylmethoxy)phenol, 2-
phenylmethoxy-4-cyclohexylphenol, 2-(2-hydroxy-4-tert-butylphenoxy)-6-propylphenol,
2-(2-hydroxyphenoxy)-5-cyclohexylmethylphenol, 2-(2-hydroxyphenoxy)-6-
10 cyclohexylphenol, 2-(2-methoxyphenoxy)-6-but-2-enylphenol, 2-(2-methoxyphenoxy)-
5-phenylmethylphenol.

33. A method of reducing the presence of microorganisms on a substrate comprising treating the substrate with an effective amount of the antimicrobial composition of claim 5.

34. The method of claim 33 wherein the antimicrobial effective carrier is selected from the group consisting of water, saline, alcohol, glycerin, propylene glycol, mineral oil, petrolatum, and mixtures thereof.

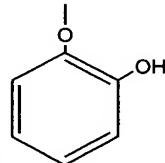
20 35. The method of claim 33 wherein the antimicrobial effective amount is from about 0.0001 to 10% by weight.

36. The method of claim 35 wherein the antimicrobial effective amount is from about 0.001 to 5% by weight.

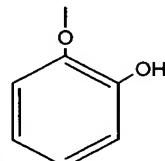
37. The method of claim 33 wherein the antimicrobial composition is in the form of a member selected from the group consisting of a deodorant, a soap, an ointment, and a cream.

5 38. A method of reducing the presence of microorganisms in an oral cavity comprising administering into the oral cavity an effective amount of the oral composition of claim 17.

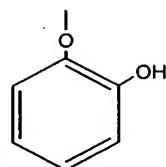
10 39. The method of claim 38 wherein the orally acceptable carrier is selected from the group consisting of water, saline, alcohol, glycerin, propylene glycol, and mixtures thereof.



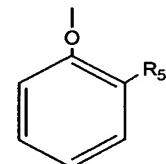
15 40. The method of claim 38 wherein R₁ is Oc1ccccc1C, each of R₃ and R₄ are hydrogen, and R₂ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



20 41. The method of claim 40 wherein R₁ is Oc1ccccc1C, each of R₂ and R₄ are hydrogen, and R₃ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



42. The method of claim 40 wherein R₁ is , each of R₂ and R₃ are hydrogen, and R₄ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



5 43. The method of claim 40 wherein R₁ is , and R₅ is alkoxy.

10 44. The method of claim 43 wherein each of R₃ and R₄ is hydrogen and R₂ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

15 45. The method of claim 43 wherein each of R₂ and R₄ is hydrogen and R₃ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

20 46. The method of claim 43 whereineach of R₂ and R₃ is hydrogen and R₄ is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

47. The method of claim 38 wherein the effective amount is from about 0.0001 to 10% by weight.

48. The method of claim 47 wherein the effective amount is from about 0.001 to 5% by weight.

5 49. The method of claim 48 wherein the oral composition is in the form of a member selected from the group consisting of a mouthrinse, a dentifrice, a chewing gum, a lozenge, a dispersible oral film, and an oral film forming dentifrice.